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ABSTRACT

This monograph examines the particular problems that can beset creative children when their behaviors are mistaken for the frequently diagnosed psychoeducational condition of Attention Deficit Hyperactivity Disorder (ADHD). A brief history of ADHD is given, tracing the difficulty that researchers have experienced in defining and accurately diagnosing this condition. Of particular concern is the fact that the defining characteristics of ADHD (inattention, hyperactivity, and impulsivity) are also key descriptors in biographies of highly creative individuals. Possible common etiologies are discussed. The possibility of an overlap in the conditions of high creativity and ADHD is proposed, and some exemplary individuals with both creativity and ADHD are described. Parents and educators are advised of appropriate actions to take if a child is suspected of having ADHD, referred for psychological screening, or diagnosed with ADHD. These recommendations include: (1) observe and record conditions in which the key behaviors are intensified or reduced; (2) ask the child what s/he is thinking about immediately after a period of daydreaming; (3) choose a psychologist who is knowledgeable about giftedness/creativity as well as ADHD; (4) get a second opinion; (5) be cautious about recommendations for the use of methylphenidates or other drugs; and (6) be cautious about recommendations for an unstimulating curriculum with lessons broken into small parts. (Contains approximately 100 references.) (DB)

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The Coincidence of Attention Deficit Hyperactivity Disorder and Creativity

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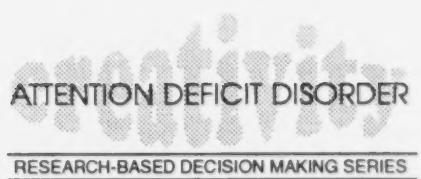
March 1995
RBDM 9508



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Dr. Bonnie Cramond is an Associate Professor of Educational Psychology at the University of Georgia and an affiliate of the Torrance Center for Creative Studies. Her teaching and research interests are in the areas of giftedness and creativity about which she has written several articles and chapters. As a teacher, researcher, and parent she has addressed audiences of teachers, researchers, and parents at the local, regional, and international levels interested in theoretical and practical information about gifted and creative individuals.

February 1995

Dear Teacher, Pediatrician, or Psychologist,

This report, The Coincidence of ADHD and Creativity, was written for you and for parents who may be concerned about children who exhibit the characteristics described within as exemplary of ADHD and creativity. Because you are such a diverse audience, it is certain that there are parts of this paper that were not written specifically with you in mind. There are also parts that may be more or less helpful to parents depending upon their sophistication about these issues.

I have tried to make this report as clear and readable as possible, yet still retain the intellectual integrity that the issue demands. I hope you will use it, or parts of it, as you find helpful. If the parents you work with would not be comfortable reading such a report, I hope you will glean some useful information from it that you can share with them.

Finally, this report may not convince you that there is problem with the misdiagnosis of creativity as ADHD. However, if it causes you to think about the issue and consider the possibility that some behaviors may be seen as indicative of proficiencies as well as deficiencies, then it has served a purpose.

Sincerely,

Bonnie Cramond

Bonnie Cramond, Ph.D.
Assistant Professor, Educational Psychology
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The Coincidence of Attention Deficit Hyperactivity Disorder and Creativity

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ABSTRACT

A review of the literature indicates that there are striking similarities between the behavioral manifestations of Attention Deficit Hyperactivity Disorder (ADHD) and creativity. A brief history of ADHD is given tracing the difficulty researchers have experienced in defining and accurately diagnosing this condition. Of particular concern is the fact that the defining characteristics of ADHD, inattention, hyperactivity, and impulsivity, are also key descriptors in biographies of highly creative individuals. The possibility of an overlap in the conditions of high creativity and ADHD is proposed, and some individuals exemplary of both conditions are described. Educators and parents are cautioned to consider the practical implications of mistaking one condition for the other, and warned about the problems with diagnosing ADHD in bright and creative children. Finally, they are advised about appropriate actions to take if a child is suspected of having Attention Deficit Hyperactivity Disorder, referred for psychological screening, or diagnosed with ADHD.

The Coincidence of Attention Deficit Hyperactivity Disorder and Creativity

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EXECUTIVE SUMMARY

The purpose of this monograph is to look at the particular problems that can beset creative children in today's schools when their behaviors are mistaken for one of the most frequently diagnosed psychoeducational conditions, Attention Deficit Hyperactivity Disorder (ADHD).

Tommy's case may be illustrative. Tommy was a very active, impulsive first grader who, according to his teacher, often "zoned out" in class. Tommy qualified for the gifted program in kindergarten with an overall IQ score in the 99th percentile. However, he had trouble learning to read and was often inattentive during reading instruction, although he enjoyed and achieved highly in mathematics. This caused his teachers and parents to be concerned about a possible learning disability.

In addition, his parents reported that his impulsive, active nature caused several trips to the emergency room. His mother described him as a "thrill-seeker who goes through life head first." His behaviors would certainly qualify him as ADHD according to the American Psychiatric Association's behavioral checklists. However, his score at the 92nd percentile on a test of creative thinking indicated high creative potential as well. Further evidence of his creativity include his interest and aptitude in art, and his teachers' comments about his many innovative ideas. When asked in first grade what he thinks about when he daydreams, he gave these examples: "If a jet can go faster than the speed of sound, and two people are sitting on a jet, the plane will move pretty far before the words of one person reach the ear of the other" and "If the ocean froze, how long would it take to walk from New York to England?"

By second grade, Tommy qualified to receive services for a learning disability in reading. In spite of teacher checklists that indicated elevated levels of inattention, impulsivity, and hyperactivity (the three hallmarks of ADHD), his parents deferred further investigation of the possibility of ADHD. They believed that his school difficulties would lessen over time.

One year after he started receiving services for a learning disability in addition to gifted services, Tommy is doing very well in school. Although reading is still a challenge to him, he is progressing steadily and gets excellent to good grades for both academics and behavior. He has received recognition for his artistic ability and is learning to express himself more through his art. Tommy continues to have a difficult temperament, but he's learning more self control—something his parents still work on themselves.

Tommy's case was complicated by the existence of a learning disability, but learning disabilities are common in children diagnosed with ADHD (Barkley, 1992; Marshall, 1992; Silver, 1992; Teeter, 1991; Weinberg & Emslie, 1990). What is uncommon about his case is that his strengths, high intelligence and creativity, were also noted. The high energy and daydreams that fueled his creativity were also manifested as the restlessness and inattention related to his inability to do the required school work. As

his frustration from being unable to read lessened, and his ability to channel his energy productively increased, his adjustment to school improved. Yet, it is possible that Tommy would have been diagnosed with ADHD, even though his symptoms were not severe and pervasive, a guideline recommended in the diagnosis of ADHD (Teeter, 1991).

This is not only possible, but likely, because ADHD has been listed as the most common reason for referral and diagnosis in children seen in psychological clinics (Frick & Lahey, 1991). Yet, few schools, psychologists, or pediatricians test or diagnose creativity in children who are having problems in school, in spite of the fact that Wallach and Kogan (1965) found that highly creative children engage in "disruptive, attention-seeking behavior" in the classroom (p. 294-295), and Getzels and Jackson (1962) found that they are not valued by their teachers as much as more conforming, less creative students.

Of course, not all creative individuals exhibit impulsivity, motor hyperactivity, and inattention. By the same token, not all children who manifest ADHD behaviors will be highly creative. The specific concern here is for creative children whose behaviors may be seen as maladaptive in school and who are incorrectly diagnosed as suffering from ADHD, when these behaviors may be indicative of creative potential.

Conceptualization and Brief History of ADHD

The description and diagnosis of Attention Deficit Hyperactivity Disorder have undergone numerous changes and reconceptualizations that have left even those who research this syndrome uncertain about its causes and behavioral manifestations (Meents, 1989). The changing names of the disorder reflect the changes in emphasis from minimal brain dysfunction to Hyperkinetic Reaction of Childhood to Attention Deficit Disorder.

In fact, given the shifting descriptions, some have questioned the validity of ADHD as a clinical syndrome (McGuiness, 1989; Shaffer & Greenhill, 1979; Werry, Reeves, & Elkind, 1987). Complicating the matter is the fact that the comparison of studies over time is impeded by the different diagnostic criteria that were used (Barkley, 1982). In 1989, Rutter argued that current diagnostic criteria were insufficient for adequately differentiating normal from abnormal degrees of activity, inattention from diverted attention, and ADHD from other clinical diagnoses. Even response to medication was not found to have a differentiating effect based on diagnosis. This is further complicated by the observed co-morbidity with other complicating conditions such as learning disabilities, conduct disorders, affective disorders, and medical conditions such as Tourette's Syndrome (cf. Livingston, Dykman, & Ackerman, 1990; Schaughency & Rothlind, 1991; Silver, 1992; Weinberg & Emslie, 1990).

The newest Diagnostic and Statistical Manual (DSM-IV—McBurnett, Lahey, & Pfiffner, 1993) classifications of ADHD allow for designating whether the condition is marked by predominantly inattentive or hyperactive/impulsive symptoms; whether it is the combined type, manifesting both types of symptoms; or whether is unspecified, manifesting symptoms of ADHD but not meeting the criteria of a minimum number of symptoms of each type.

Characteristics of Creativity and ADHD Compared

The primary symptoms of ADHD are inattention, hyperactivity, and impulsivity (Frick & Lahey, 1991). A review of the literature on ADHD and creativity, respectively,

revealed several identical or similar characteristics. The characteristics were grouped for the following discussion according to conceptual similarity, although in some cases the wording indicates a more positive or negative connotation of a behavior.

Inattention

As is apparent in the changed conceptualization, inattention is one of the areas that has received the most interest in recent years and is considered a defining characteristic of ADHD. Lahey and colleagues (1988) described the ADHD child as one who is easily distracted, often fails to finish things, and frequently shifts activities. Yet, creative people are described as having a broad range of interests and showing a tendency to play with ideas, sometimes losing interest in one to take up another. A famous example of this is Leonardo da Vinci. Although known for his painting, there are only 17 paintings that can be attributed to his 67 years as an artist, and some of these are incomplete. His tendency to leave projects unfinished reportedly resulted in Pope Leo X's exasperated exclamation, "This man will never accomplish anything! He thinks of the end before the beginning" (Wallace, 1966, p. 150). Even Freud was fascinated with Leonardo's tendency to abandon projects claiming it was because the artist had been abandoned by his father (Freud, 1910). However, most pertinent for this discussion may be Leonardo's explanation for his failure to finish his projects: his interests were so many and so diverse (Wallace, 1966, p. 169).

According to Werry, Reeves, and Elkind (1987), the lack of attention or concentration indicative of ADHD is also exemplified by daydreaming and not seeming to listen. However, this observation could also be made of a person who is paying very close attention to internal thoughts and visualizations. It is possible that the creative person is preoccupied, as such individuals are wont to be according to Barron (1976). Nikola Tesla had such strong visualization abilities that he would imagine the workings of his inventions to great detail without putting anything on paper or conducting any experiments until all of the problems were worked out (Cheney, 1981). Frank Lloyd Wright reported that his reveries were so intense that his uncle would have to shout at him to get him back (Piirto, 1992, p. 310). Torrance noted that, "Robert Frost was dropped from school for what we call daydreaming; during some of his lapses from attention he was probably revolving a poem in his mind. Other eminent creative writers, scientists, and inventors have had similar experiences" (Torrance, 1963, p. 49).

Hyperactivity

A key question here is how to differentiate hyperactivity from a high level of normal activity (Rutter, 1989), or to discriminate between restlessness that prevents one from completing tasks and restlessness that drives one to be productive. According to the DSM-IV (McBurnett, Lahey, & Pfiffner, 1993), hyperactivity is observed as excessive fidgeting, difficulty staying seated, excessive running and climbing, and difficulty playing quietly, although in adolescents and adults it may be manifested as internal feelings of restlessness. For example, the workers in the laboratory with Edison and Tesla were amazed at the high energy of these two men; they were said to work without sleep for two to three days when necessary (Cheney, 1981, p. 31).

Whatever it is called, lists of characteristics of creative individuals often describe them as radiating vitality (Ochse, 1990) and having a high energy level (Davis, 1986). Adding another term to the group, Dabrowski described psychomotor overexcitability as one of the five areas of heightened sensitivity, along with intellectual, imaginational,

emotional, or sensual, that individuals with the potential for higher development may possess (Piechowski & Colangelo, 1984). Defined as a surplus of energy (Piechowski, 1986), psychomotor overexcitability is manifested as physical activity and expression of emotional tension, e.g., rapid speech, restlessness, fast games and sports, marked enthusiasm, delinquent behavior, impulsive actions, and nervous habits (Piechowski, 1979).

Impulsivity

According to the DSM-IV, diagnostic criteria for impulsivity include observations that the individual frequently calls out in class, and has difficulty awaiting a turn (McBurnett, Lahey, & Pfiffner, 1993). The DSM-III-R also included the criterion of acting without thinking, often by engaging in dangerous activities without considering the outcome, although we were cautioned that this does not apply to thrill seeking behavior (American Psychiatric Association, 1987). Some problems may be noted immediately with the overlap of this criterion with the previous one of hyperactivity. Using Piechowski's (1986) description of Psychomotor Overexcitability, both high levels of activity and impulsivity would be included.

One of the key descriptors of creative individuals is risk taking, sensation seeking, or thrill seeking (Barron, 1988; Farley, 1981; Torrance, 1968). In fact, Farley has proposed a biologically based model of creativity that explains stimulation seeking as related to low innate arousability (Farley, 1981; 1985). He also concluded that the implications of stimulation seeking are of great importance for the childhood disorder of hyperactivity, which he described as a disorder also characterized by stimulation seeking (Farley, 1981). Therefore, he advised that children so diagnosed should be treated with adaptive education by nurturing their creativity rather than adaptive medication.

Other Behavioral Similarities

Other defining characteristics of ADHD include difficult temperament, deficient social skills, and academic underachievement (Werry, Reeves, & Elkind, 1987), however these symptoms do not sufficiently differentiate the creative child from the child with ADHD either.

The stories of creative individuals with what are considered difficult temperaments are so abundant that the characteristic has become a stereotype. Individuals who exhibit unconventional behavior, as many creative people do (Sternberg, 1988), may be seen as lacking in social skills. However, Maslow (1971) made a case for privacy and detachment from others as essential to the creative process. Even academic underachievement is not a clear distinction between those who suffer from an impairing condition that requires treatment and those whose interests and talents do not coincide with school requirements. The stories of academic underachievement, or irregular school achievement, of famous creative individuals such as Einstein and Edison are legend. Just as Rutter (1989) speculates about the difficulty of differentiating between inattention and diverted attention, so too, is it difficult to differentiate between underachievement and diverted achievement in children.

Summary Statement

Because Attention Deficit Hyperactivity Disorder (ADHD) is a psychological classification that has undergone numerous changes in conceptualization and diagnosis over time (Meents, 1989) and place (Levine & Melmed, 1982), and because extant treatments for this disorder have shown limited and questionable long-term results (Meents, 1989; Silver, 1992; Swanson et al., 1993), it is important for educators to look carefully at the behaviors that may warrant such a diagnosis and label for a child. This is of special concern to the field of gifted/creative education because the very behaviors that may induce a diagnosis of ADHD have also been shown to have correlates in the literature on creative behavior (Cramond, 1994b).

Parents and teachers are cautioned to look carefully at behaviors exhibited by children for what may be potentialities instead of deficiencies. Specific recommendations in this regard give guidance when a problem is suspected, when the child is recommended for psychological screening, and after a diagnosis of ADHD is made.

Recommendations for Teachers and Parents

When Attention Deficit Hyperactivity Disorder is suspected

Recommendation 1: Be open-minded to the possibility that difficult behaviors may be indicative of special abilities, such as creativity, as well as problems.

Research Basis: There are many similarities in the behavioral manifestations of creativity and ADHD that may cause errors in attribution (Cramond, 1994b). Farley (1981) and Shaw (1992) have speculated it is the very qualities that are involved in the ADHD diagnosis that enable creative responses.

Recommendation 2: Become knowledgeable about the behavioral manifestations of creativity and ADHD throughout the life span.

Research Basis: Although more recent evidence indicates that ADHD is a lifelong condition (Teeter, 1991), the very behaviors that cause difficulties for children in school situations may be helpful in adult careers for which high energy, risk-taking, flexibility in ideation, and ambition may be assets (Hartmann, 1993; Levine & Melmed, 1982; Winslow & Solomon, 1987). Also, children with creative potential may not manifest consistent creative productivity, especially in certain fields, until they mature (Bloom, 1985).

Recommendation 3: Observe and record under what conditions the key behaviors are intensified or reduced.

Research Basis: Because ADHD-type behaviors may be exacerbated when the child is required to engage in unstimulating, highly structured, repetitive tasks (Frick & Lahey, 1991), noting under what conditions the child is most likely to exhibit the behaviors may be instructive. According to Farley (1981), sensation seeking behavior is increased in unstimulating environments.

Recommendation 4: Ask the child what s/he is thinking about right after a period of daydreaming.

Research Basis: Because it is difficult to differentiate between inattention and diverted attention (Rutter, 1989), it may be informative to discover whether the daydreaming child is not attending or is attending to alternative stimuli, plans, or ideas that are focused.

If the child is referred for psychological screening

Recommendation 5: Whenever possible, choose a psychologist who is knowledgeable about giftedness and creativity as well as Attention Deficit Hyperactivity Disorder, or willing to learn.

Research Basis: Because there is no definitive test for ADHD, the diagnosis of this disorder is made through the use of behavioral checklists. Such a diagnosis is susceptible to the interpretations of various observers as to the frequency and severity of the behavior, and correlations of behaviors between parent and teacher reports have been low (Biederman, Keenan, & Faraone, 1990; Schaughency & Rothlind, 1991). Webb (1993) observed that few psychologists have had any training in recognizing characteristics of gifted and creative children. Therefore, a psychologist who is willing to learn about the similarity of characteristics, perhaps by reading a paper such as this, would be preferred.

Recommendation 6: Be sure that a creativity test or checklist is completed in addition to the ADHD checklist.

Research Basis: Once the behaviors have been interpreted as deficiencies, it is unlikely that related proficiencies will be seen. In a recent study (Cramond, 1994a), it was determined that half of the ADHD diagnosed group scored above the 70th percentile on a test of creativity, yet only seven of the 34 (21%) children had been screened for the gifted program. Eleven of these children, 32% of the ADHD group, scored above the 90th percentile, and only six had been screened for the gifted program. None had any indications of observed creativity in their records, although several had indications of other problems such as learning disabilities and emotional handicaps.

If the child is diagnosed as having ADHD

Recommendation 7: Get a second opinion.

Research Basis: Even in a clinical setting with diagnoses based on interviews and judgment of symptoms indicative of the DSM-III, reliability of diagnoses were very low (Werry, Methven, Fitzpatrick, & Dixon, 1983). The definitions and criteria for diagnosis of ADHD have changed so often that even those who research ADHD are in conflict over its causes and defining behaviors (Meents, 1989). Children diagnosed under one version of the DSM criteria would not be diagnosed under another (Schaughency & Rothlind, 1991). Thus, whether a child is diagnosed with ADHD may depend to a large extent upon when (Meents, 1989) and where (Levine & Melmed, 1982) the referral is made.

Recommendation 8: Be cautious about recommendations for the use of methylphenidates or other drugs.

Research Basis: There is reason to be concerned that the increase in attention and left hemisphere enhancement comes at a price to cognitive functioning in other areas (Malone, Kershner, & Siegel, 1988), although some studies have indicated that groups on medication perform as well or better on tests of creativity while they are on medication (Funk, Chessare, Weaver, & Exley, 1993; Solanto & Wender, 1989). Other complicating factors associated with the use of methylphenidates, of which Ritalin is the most commonly prescribed for ADHD, include the worsening or inducement of depression (Weinberg & Emslie, 1990) as well as appetite reduction, insomnia, increased irritability, headaches, stomachaches, motor and/or vocal tics, and suppression of height and weight gain (DuPaul, Barkley, & McMurray, 1991). However, for most children side-effects are mild and associated with higher dosages (DuPaul et al., 1991). Of equal concern in assessing the costs and benefits of medication treatment is the lack of evidence of any long term benefits of the medication (DuPaul et al., 1991; Meents, 1989). In their review of the literature on the effect of stimulant medication on children with ADHD, Swanson and his colleagues (1993) concluded that with medication one should expect temporary management of diagnostic symptoms and improvement of associated features, but should not expect predictability of response, absence of side effects, or improvement in long-term adjustment in terms of academic achievement or reduction of antisocial behavior (p. 159).

Recommendation 9: Be cautious about recommendations for an unstimulating curriculum with lessons broken into small parts.

Research Basis: Although such recommendations are common, the limited effectiveness of interventions on the long-term achievement of children diagnosed with ADHD (Silver, 1992) cast doubt on their broad, continued usage. Zentall and Leib (1985) found that a structured prescribed-response condition reduced the activity levels of both hyperactive

children and controls, suggesting that structure is useful in decreasing activity level. However, Farley's (1981) research connecting both hyperactivity and creativity to sensation-seeking lead his colleagues and him to a series of studies to investigate the aptitude-treatment interaction of level of sensation seeking and crossed with educational environment, traditional, and structured versus unstructured and open. He concluded that hyperkinetic children need arousing, unstructured, creative teaching to perform best, exhibit fewer hyperkinetic symptoms, and report greater satisfaction with school. It is clear that given the heterogeneity of the group of children who are diagnosed under the umbrella designation of ADHD, the needs of the individual child should be considered in designing a modification in the curriculum (Silver, 1992). Gifted, creative children who exhibit behaviors typical of ADHD still have the needs for complex, stimulating curriculum that other gifted, creative children require.

Recommendation 10: Provide opportunities both inside and outside of school to enhance creativity and build self-esteem.

Research Basis: The emphasis in research and intervention with ADHD is on identifying deficiencies (c.f. Frick & Lahey, 1991; McBurnett, Lahey, & Pfiffner, 1993) and remediating them (c.f. Burcham, Carlson, & Milich, 1993). Although good school-practices for ADHD children should focus on strengths as well as weaknesses (Burcham et al., 1993), it is often up to the parents to provide opportunities for expression of creative strengths outside of school. A negative label may affect not only the way a child is perceived by teachers, but also the child's self esteem (Rosenthal & Jacobson, 1968). If medication is prescribed, there may be psychological effects on attribution for behavior (Swanson et al., 1993), in that the child gives up responsibility for his behavior and charges his good or bad behavior to the medication. Therefore, it is important to bolster the self esteem and nurture strengths as much as possible within school and without. Parents and teachers should work together to help the child find a mode of expression and learn to use that to get the ideas, emotions, and energy out productively.

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The Coincidence of Attention Deficit Hyperactivity Disorder and Creativity

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Introduction

Robert daydreamed so much that he was put out of school. Frank went into such trancelike dreams that one had to shout at him to bring him back. Equally problematic were Sam's restlessness and verbal diatribes. Virginia, too, demonstrated a tendency to talk on and on. Thomas experienced school problems, in part because of his high energy. Nick's tendency to act without thinking caused him to have several scrapes with death and near-tragedies, such as plunging to the earth from the roof of a barn, clutching an umbrella. In these examples we can see how the concentration, high energy, and unique ways of thinking and behaving that were exemplified by Robert Frost, Frank Lloyd Wright, Samuel Taylor Coleridge, Virginia Woolf, Thomas Edison, and Nikola Tesla resulted in school problems, dark diagnoses, or worse. These are examples of creative individuals whose behavior could also be interpreted as the inattention, impulsivity, and hyperactivity of Attention Deficit Hyperactivity Disorder.

The stories of creative individuals are replete with instances of childhood problems in school (Piirto, 1992; Thompson, 1971; West, 1991). Although it has been argued that many creative individuals have suffered from mood disorders and other clinically significant psychological problems (Hershman & Lieb, 1988; Jamison, 1993), there are others whose behavior, although irregular, may be more indicative of their creativity than of any disorders. In the case of Janet Frame, New Zealand's poet and novelist, her "difference" resulted in a diagnosis of schizophrenia, confinement to a mental institution, and the scheduling of a lobotomy that was only canceled when her first novel gained widespread distinction (Frame, 1984, pp. 110-111). In some cases the very qualities that cause creative individuals to have problems are the same ones that may facilitate in their creative accomplishments. Edison's energy, the vivid imagery in the daydreams of Frost and Wright, and Einstein's alternative mode of thinking created problems for them in school, but were undoubtedly invaluable in their creative endeavors.

Schools and families can best prevent misinterpretation of a child's behaviors by becoming aware of those indicative of high creativity and attempting to sort out the disabling from enabling ones. This is no small task because many creative behaviors look like those that can result in a negative diagnosis. This is particularly problematic for children because the creative potential may not yet be manifest and only the aberrant behaviors are apparent. As in the case of Janet Frame, only after one has been recognized as creative will some of the characteristics be viewed as eccentric rather than problematic.

The issue of the relationship of creativity to psychopathology is a mare's-nest of causes and attributions. It is not the purpose of this work to attempt to resolve these issues. Rather, it is to look at the particular problems that can beset creative children in today's schools when their behaviors are mistaken for one of the most frequently diagnosed psychoeducational conditions, Attention Deficit Hyperactivity Disorder (ADHD).

This is not only possible, but likely, because ADHD has been listed as the most common reason for referral and diagnosis in children seen in psychological clinics (Frick &

Lahey, 1991). Yet, few schools, psychologists, or pediatricians test or diagnose creativity in children who are having problems in school, in spite of the fact that Wallach and Kogan (1965) found that highly creative children engage in "disruptive, attention-seeking behavior" in the classroom (p. 294-295). Similarly, Getzels and Jackson (1962) found that they are not valued by their teachers as much as more conforming, less creative students.

Of course, not all creative individuals exhibit impulsivity, motor hyperactivity, and inattention. By the same token, not all children who manifest ADHD behaviors will be highly creative. The specific concern here is for creative children whose behaviors may be seen as maladaptive in school and who are incorrectly diagnosed as suffering from ADHD, when these behaviors may be indicative of creative potential. Although it is possible that the reverse situation could also occur, i.e., children with ADHD incorrectly labeled as creative, it is unlikely because creativity is infrequently identified. On the other hand, ADHD has been listed as the most common reason for referral and diagnosis in children seen in psychological clinics (Frick & Lahey, 1991). Furthermore, the consequences of incorrectly labeling a child as creative are not as severe as those for incorrectly labeling someone as ADHD.

Conceptualization and Brief History of ADHD

Although the designation Attention Deficit Hyperactivity Disorder is recent, researchers working with this disorder claim that it was described as early as the turn of the century (Barkley, 1990), or even in the Old Testament (Silver, 1992). A large part of the difficulty in tracing the history of this disorder is that the conceptualization, designation, and diagnosis have changed so much over time. Barkley (1990) divides the history of this disorder into distinct periods based upon the presumed etiology or emphasized behavior of the time. From about 1900-1960 the emphasis was on brain damage or dysfunction as a cause and explanation for the syndrome then known as *minimal brain dysfunction*. The period from 1960-1969 saw a shift in emphasis to the defining characteristic of hyperactivity and a corresponding change in terminology to *hyperactive child syndrome* or *hyperkinetic reaction of childhood*. From 1970-1979 emphasis was again shifted to what had previously been considered an associated characteristic of the syndrome, attention deficits. However, it wasn't until the period of 1980-1989 that the name changed to Attention Deficit Disorder, and diagnostic criteria emphasizing inattention, impulsivity, and hyperactivity as the three major defining characteristics of the disorder were published (DSM-III; American Psychiatric Association, 1980). In fact, a multidimensional classification scheme was introduced reflecting the new emphasis on attention and relegating hyperactivity to a position as an associated characteristic, so that a person could be ADD/H (with hyperactivity) or ADD/WO (without hyperactivity).

Then, in 1987, because of insufficient evidence for the division of the syndrome into two categories, a unidimensional definition was proposed in the revision of the third edition of the Diagnostic and Statistical Manual (DSM-III-R, American Psychiatric Association). Accordingly, *Attention Deficit Hyperactivity Disorder* was diagnosed by the manifestation of eight or more of a list of 14 symptoms that reflected difficulties in attention, impulsivity, or motor hyperactivity without concern for which of the three types of behaviors were observed. Consequently, children were diagnosed with ADHD without exhibiting any signs of hyperactivity if they had eight of the inattention and impulsivity characteristics. The DSM-III-R preserved the concept of attention disorders without hyperactivity in the diagnosis of *undifferentiated attention-deficit disorder* (UADD). However, this classification also excluded impulsivity, and was therefore very different

from ADD/WO (Goodyear & Hynd, 1992). There were obvious problems with this nomenclature and method of diagnosis (Frick & Lahey, 1991).

The newest DSM-IV (McBurnett, Lahey, & Pfiffner, 1993) classifications of ADHD allow for designating whether the condition is marked by predominantly inattentive or hyperactive/impulsive symptoms; whether it is the combined type, manifesting both types of symptoms; or whether it is unspecified, manifesting symptoms of ADHD, but not meeting the criteria of a minimum number of symptoms of each type.

The description and diagnosis of Attention Deficit Hyperactivity Disorder have undergone numerous changes and reconceptualizations that have left even those who research this syndrome uncertain about its causes and behavioral manifestations (Meents, 1989). This is further complicated by the observed co-morbidity with other complicating conditions such as learning disabilities, conduct disorders, affective disorders, and medical conditions such as Tourette's Syndrome (cf. Livingston, Dykman, & Ackerman, 1990; Schaughency & Rothlind, 1991; Silver, 1992; Weinberg & Emslie, 1990).

In fact, given the shifting descriptions, some have questioned the validity of ADHD as a clinical syndrome (McGuiness, 1989; Shaffer & Greenhill, 1979; Werry, Reeves, & Elkind, 1987). Complicating the matter is the fact that the comparison of studies over time is impeded by the different diagnostic criteria that were used (Barkley, 1982). In 1989, Rutter argued that current diagnostic criteria were insufficient for adequately differentiating normal from abnormal degrees of activity, inattention from diverted attention, and ADHD from other clinical diagnoses. Even response to medication was not found to have a differentiating effect based on diagnosis. At one point, Barkley (1990, pp. 26-27) proposed that given the failure of controlled studies to find problems with sustained attention in the target population consistently, the emphasis of the disorder would change again to reflect motivation deficits. More recently, he has suggested that the disorder is the result of lack of inhibition (Barkley, 1993).

In spite of, and perhaps because of, this uncertainty, ADHD is one of the most commonly diagnosed childhood psychiatric disorders today (Barkley, 1990, p. 3). Estimates of the prevalence of ADHD vary between 1 and 20% (Barkley, 1990, p. 61). However, when asked to identify behavior problems in children, teachers identified 30-57% of the boys and 12-43% of the girls as having problems with hyperactivity, restlessness, and/or inattention (Lapouse & Monk, 1958; Werry & Quay, 1971). Most experts agree that the incidence of ADHD in the population is roughly 3%. This varies according to the location, probably, according to Dr. Sidney Wolfe, director of the Public Citizen Health Research Group, because school systems with more formal, rigid expectations for behavior tend to refer more children for an ADHD diagnosis (Parham & Ferris, 1994).

Because Attention Deficit Hyperactivity Disorder is primarily diagnosed through a behavioral observation and/or checklist, and because many of the behaviors can also be indicative of creativity, it is important for educators to look carefully at the behaviors that may warrant such a diagnosis and label for a child. For example, Levine and Melmed (1982) have speculated that the ADHD-type behaviors of distractibility, rapid cognitive tempo, and insatiability may be expressed in adulthood as flexibility in ideation, productivity, and ambition. One can only imagine what type of children grew into the entrepreneurs that Winslow and Solomon (1987) described as risk-taking, action-oriented, and energetic.

Possible Common Etiologies

Brain Structure

There is a possibility that structural differences in the brain are related to the differences in cognitive functioning that appear as ADHD or creativity. Neurobiological anomalies are reported in both the literature on ADHD (Hynd, Hern, Voeller, & Marshall, 1991) and the literature on creativity (Herrmann, 1981; Torrance, 1984). Geschwind (1984), though emphasizing that creativity could not be attributed solely to the right hemisphere, expounded upon the remarkable talents associated with individuals who exhibit anomalous or mixed brain dominance. Geschwind and Galaburda (1987) also noted the predominance of the right hemisphere in spatial orientation, emotional expression, and attention (p. 44-45). The importance of effective communication between the hemispheres for creative productivity was noted by Restak (1993) who also described instances of brain damage that enhanced creativity.

The possibility of structural differences in the brain being a link between ADHD and creativity was strengthened by some empirical evidence provided by Shaw (1992). She found that a group of bright, ADHD children exhibited greater crossed eye-hand dominance and left laterality than a group of normal children matched by age, sex, and IQ. The ADHD group also had higher figural creativity and more use of imagery in problem solving.

Bachtold (1980) suggested that observed brain differences cause diverse ideation. She has claimed that intelligent individuals who are bombarded by ideas seek to make sense of them by organizing them into new perceptual relationships. Thus the creative, original idea is born.

Cognitive Processing

The cognitive processing that results in ideation and demands on attention was noted in studies with ADHD students. In two studies, Shaw (Shaw, 1992; Shaw & Giambra, 1993) found that ADHD students reported a greater abundance of spontaneous thoughts during a problem-solving exercise. In one experiment the peripheral information was used to solve the problems (Shaw, 1992), and in the other it was seen as unrelated to the vigilance task (Shaw & Giambra, 1993). Shaw and Giambra interpreted this as an indication that ADHD students have more internal distractions from fleeting sensory input and less command over their thought processes than do others, especially during boring tasks. On the other hand, Shaw (1992) speculated that such spontaneous and diverse ideation may be part of the process that fosters more creative responses on a test of divergent thinking.

Temperament and Mood

Sensation Seeking

Another possibility is that there are certain temperament traits that predispose individuals to exhibit behaviors that are characteristic of both ADHD and creativity. For example, the in-born temperament trait of sensation seeking has been linked to both ADHD (Zuckerman, 1983) and creativity (Barron, 1988; Farley, 1981; Torrance, 1968). Shaw and Giambra (1993) also noted the link provided by the trait of sensation seeking in both creative and ADHD populations.

Zuckerman (1983) reported that sensation seeking is greater in ADHD children than in normal children. This may be understood in light of the hypothesis that ADHD children seek stimulation as a result of underarousal in the reticular activating system and cortex (Klöve, 1989). According to Zentall and Zentall (1983), there is an optimal level of stimulation necessary to maintain the engagement of attention disordered children. This may explain the situational variability that has been observed in the manifestation of ADHD characteristics (Frick & Lahey, 1991). Douglas (1983) proposed that ADHD children are usually either underaroused by dull, repetitive tasks or hyperaroused by interesting ones.

Farley (1981) has proposed that the same is true of creative individuals. In fact. Farley has proposed a biologically based model of creativity that explains stimulation seeking as related to low innate arousability (Farley, 1981; 1985). From his body of research examining the relatedness of creativity to arousability, Farley has concluded that:

> The search for variety and intensity of stimulation of the low arousal individual will lead to the openness to experience, the flexibility, risk taking, high energy level, preference for complexity, playfulness, receptivity to new and novel ideas and experiences, and so on that are held to be characteristic of the creative person, as well as the flexibility of performance, generation of performance variety, novelty, complexity, and so on that are often held to be important attributes of creative performance. Thus, the personality attributes of the creative individual, as well as the characteristics of creative performance, are seen as in part deriving from or serving the sensation-seeking motive. (pp. 24-25)

Most pertinent, Farley (1981) concluded that the implications of stimulation seeking are of great importance for the childhood disorder of hyperactivity, which he described as a disorder characterized by stimulation seeking. Therefore, he advised that children so diagnosed should be treated with adaptive education rather than adaptive medication. Specifically, he proposed that such children ". . . be exposed to arousing education, perhaps open-space classrooms, more unstructured conditions, discussion and discovery instructional modes, divergent creativity experiences, arousing, extroverted teachers, and so on" (p. 22). In short, nurture their creativity.

Sensitivity to Stimulation

Another temperament connection may be provided by Dabrowski's Theory of Positive Disintegration (1964). According to Dabrowski, individuals may manifest extreme sensitivity to stimulation, or psychic overexcitabilities, in any of five areas: intellectual, psychomotor, imaginational, emotional, or sensual. Individuals who have an innate tendency to experience and express themselves in certain combinations of these areas have the potential for a higher level of development. Of the five, emotional, intellectual, and imaginational overexcitabilities have been theorized to be most indicative of developmental potential (Piechowski & Colangelo, 1984). Viewed as promising by Dabrowski, emotional overexcitability in childhood may be viewed as the emotional lability of ADHD; psychomotor overexcitability may be viewed as hyperactivity. The overexcitabilities in combination may produce an intensity that has often been used to describe creative individuals (Getzels & Csikszentmihalyi, 1976). Using similar language, Bachtold (1980) described the creative individual as a person with a low sensory threshold and strong reactions to sensory stimuli.

Depression

Finally, there is the observation that ADHD-like behavior can result from depression (Silver, 1992; Weinberg & Emslie, 1990). Weinberg and Emslie (1987, 1990)

noted that many children who are diagnosed with ADHD also suffer from depression or bipolar disorder (depression alternating with manic states). They also observed that both depression and mania appear to have biological bases in brain anomalies. In the case of depression, the right cerebral hemisphere is implicated as malfunctioning (Weinberg & Emslie, 1990, p. 8).

Likewise, depression and bipolar disorder have been noted in the lives of creative people (Hershman & Lieb, 1988; Jamison, 1993; Leonard, 1989; Pickering, 1974; Richards, 1981, 1990; Richards & Kinney, 1990), especially among writers (Andraeson & Glick, 1988; Piirto, 1992; Restak, 1993). The mechanism for the relationship between creativity and depression is unclear. Because depression and bipolar disorder run in families, there is an indication of a heritable factor (Jamison, 1993), either in some structural or biochemical differences in the brain. On the other hand, the sensitivity and intensity that facilitates creative expression may also make highly creative people more susceptible to depression (Piirto, 1992). The belief in the latter is what causes many creative people to refuse drug treatments to lessen the ravages of mood disorders; they believe that the drugs lessen their creativity (Restak, 1993, p. 73). The consensus among researchers working on the relationship between creativity and mood disorders seems to be that some depression and mania may enable creative production, but if the disorder becomes too severe it is disabling (Andraeson & Glick, 1988; Jamison, 1993; Richards, 1981, 1990; Richards & Kinney, 1990).

Characteristics of Creativity and ADHD Compared

Although the primary symptoms of ADHD are inattention, hyperactivity, and impulsivity, there are lists of secondary characteristics and exemplifying behaviors that should be considered. A review of the literature on ADHD and creativity, respectively, revealed several identical or similar characteristics. The characteristics were grouped for the following discussion according to conceptual similarity, although in some cases the wording indicates a more positive or negative connotation of a behavior.

Inattention

As is apparent in the changed conceptualization, inattention is one of the areas that has received the most interest in recent years and is considered a defining characteristic of ADHD. Lahey and colleagues (1988) described the ADHD child as one who is easily distracted, often fails to finish things, and frequently shifts activities. Yet, creative people are described as having a broad range of interests and showing a tendency to play with ideas, sometimes losing interest in one to take up another. A famous example of this is Leonardo da Vinci. Although known for his painting, there are only 17 paintings that can be attributed to his 67 years as an artist, and some of these are incomplete. His tendency to leave projects unfinished reportedly resulted in Pope Leo X's exasperated exclamation, "This man will never accomplish anything! He thinks of the end before the beginning" (Wallace, 1966, p. 150). Even Freud was fascinated with Leonardo's tendency to abandon projects claiming it was because the artist had been abandoned by his father (Freud, 1910). However, most pertinent for this discussion may be Leonardo's explanation for his failure to finish his projects: his interests were so many and so diverse (Wallace, 1966, p. 169).

According to Cheney (1981), Tesla also pursued so many ideas that he ". . . often did not follow-up on his intuitions, theories, and preliminary experiments to the point of verification" (p. 147). This became a problem because others were then free to complete the invention and get credit for it as Tesla claimed Marconi did with the telegraph. Tesla

was driven to action at one point when his bookkeeper reminded him that money was running out and his inventions were not being completed (p. 127).

According to Werry, Reeves, and Elkind (1987), the lack of attention or concentration indicative of ADHD is also exemplified by daydreaming and not seeming to listen. However, this observation could also be made of a person who is paying very close attention to internal thoughts and visualizations. It is possible that the creative person is preoccupied, as such individuals are wont to be according to Barron (1976). Nikola Tesla had such strong visualization abilities that he would imagine the workings of his inventions to great detail without putting anything on paper or conducting any experiments until all of the problems were worked out (Cheney, 1981). Frank Lloyd Wright reported that his reveries were so intense that his uncle would have to shout at him to get him back (Piirto, 1992, p. 310). Torrance noted that, "Robert Frost was dropped from school for what we call daydreaming; during some of his lapses from attention he was probably revolving a poem in his mind. Other eminent creative writers, scientists, and inventors have had similar experiences" (Torrance, 1963, p. 49).

Hyperactivity

A key question here is how to differentiate hyperactivity from a high level of normal activity (Rutter, 1989), or to discriminate between restlessness that prevents one from completing tasks and restlessness that drives one to be productive. According to the DSM-IV (McBurnett, Lahey, & Pfiffner, 1993), hyperactivity is observed as excessive fidgeting, difficulty staying seated, excessive running and climbing, and difficulty playing quietly, although in adolescents and adults it may be manifested as internal feelings of restlessness. For example, the workers in the laboratory with Edison and Tesla were amazed at the high energy of these two men; they were said to work without sleep for two to three days when necessary (Cheney, 1981, p. 31). Such high energy served them well in their adult years; however, there are indications that it got Tesla into hot water, or rather milk, in childhood. According to Cheney (1981) Tesla was quite an active child,

> . . . he was almost drowned on numerous occasions, was nearly boiled alive in a vat of hot milk, just missed being cremated, and was once entombed (overnight in an old shrine). Hair raising flights from mad dogs, enraged flocks of crows, and sharp tusked hogs spiced this catalogue of near-catastrophes. (p. 8)

Whatever it is called, lists of characteristics of creative individuals often describe them as radiating vitality (Ochse, 1990) and having a high energy level (Davis, 1986). Dabrowski used the term psychomotor overexcitability. Defined as a surplus of energy (Piechowski, 1986), psychomotor overexcitability is manifested as physical activity and expression of emotional tension, e.g., rapid speech, restlessness, fast games and sports, marked enthusiasm, delinquent behavior, impulsive actions, and nervous habits (Piechowski, 1979).

In testing whether the overexcitabilities could distinguish between gifted and non-identified students, Ackerman (1993) found that Psychomotor, along with Emotional, and Intellectual Overexcitabilities as measured by the *Overexcitabilities Questionnaire* (OEQ, Piechowski & Cunningham, 1985), differentiated between the two groups. When comparing a more and less creative group, Gallagher (1986) discovered that students who scored in the top third on a figural test of creativity had significantly higher Psychomotor Overexcitability scores than those who scored in the bottom third on the creativity test. Calic's research (1994) compared a group selected for creativity and academic ability to one selected for academic ability alone on their responses to the OEQ. The more creative group (visual and performing artists) had higher Psychomotor, Imaginational, and Sensual

Overexcitability scores than did the comparison group. Of course, not all creative individuals manifest such high energy. Perhaps, as Piechowski and Cunningham (1985) conjectured, the pattern and interaction of heightened sensitivities may differentiate types of creative personalities as well as separate creative from intellectually gifted individuals.

Impulsivity

According to the DSM-IV, diagnostic criteria for impulsivity include observations that the individual frequently calls out in class and has difficulty awaiting a turn (McBurnett, Lahey, & Pfiffner, 1993). The DSM-III-R also included the criterion of acting without thinking, often by engaging in dangerous activities without considering the outcome, although we were cautioned that this does not apply to thrill seeking behavior (American Psychiatric Association, 1987). Some problems may be noted immediately with the overlap of this criterion with the previous one of hyperactivity. Using Piechowski's (1986) description of Psychomotor Overexcitability, both high levels of activity and impulsivity would be included. Another problem is with the caveat that the impulsive behavior should be exclusive of thrill seeking. How would an observer differentiate? Perhaps that is why this descriptor has been dropped from the DSM-IV list.

One of the key descriptors of creative individuals is risk taking or thrill seeking (Barron, 1988; Farley, 1981; Torrance, 1968). Described earlier as an innate temperamental trait of sensation seeking, perhaps it was this tendency that Ghiselin (1952) referred to as a need to transcend the established order into disorder and chaos motivated by a restlessness, or "less psychic inertia than the average man" (pp. 14-18).

Other Behavioral Similarities

Although the primary symptoms of ADHD are listed as inattention, impulsivity, and motor hyperactivity (Frick & Lahey, 1991), other characteristics include difficult temperament, deficient social skills, and academic underachievement (Werry, Reeves, & Elkind, 1987). These symptoms do not sufficiently differentiate the creative from the child with ADHD either.

Difficult Temperament and Deficient Social Skills

The stories of creative individuals with what are considered difficult temperaments are so abundant that the characteristic has become a stereotype. According to Dabrowski (Piechowski & Colangelo, 1984), the emotional volatility that is a key to this perception would be expected in a creative person because of the heightened sensitivity and reactivity to emotions.

Individuals who exhibit unconventional behavior, as many creative people do (Sternberg, 1988), may be seen as lacking in social skills. Getzels and Csikszentmihalyi (1976) described the personalities of the artists that they studied as aloof and nonconforming to conventional standards of behavior.

Kerr (1985) proposed that some antisocial behavior that creative people exhibit may be a defense against others' reactions to their differentness. She described eminent women with personality types of thorn or shells. The thorns are exemplified by Gertrude Stein, Georgia O'Keefe, and Margaret Mead whose behavior was often caustic; Marie Curie retreated into the shell of shyness that Eleanor Roosevelt and Maya Angelou fought to leave (p. 71).

Deficient social skills may also be inferred from, or related to, a preference for solitude. Maslow (1971) made a case for privacy and detachment from others as essential to the creative process, and Piirto (1992) called solitude "the core of the creative process" (pp. 48-50). Ochse (1990) explained the need for solitude both as part of the creative personality and process.

Academic Underachievement

Even academic underachievement is not a clear distinction between those who suffer from an impairing condition that requires treatment and those whose interests and talents do not coincide with school requirements. The stories of academic underachievement, or irregular school achievement, of famous creative individuals such as Einstein and Edison are legend. Goertzel, Goertzel, and Goertzel (1978), in their chronicle of 300 eminent people, reported that the artists in the group were not typically considered to be good students in school. Just as Rutter (1989) speculates about the difficulty of differentiating between inattention and diverted attention, so too, is it difficult to differentiate between underachievement and diverted achievement in children.

The Nature of the Creativity-ADHD Relationship

The exact nature of the relationship between creativity and ADHD is not known at this time, in large part because creativity and ADHD are themselves such complex and puzzling constructs. However, there are several possible relationships.

The first, perhaps most obvious, is that there is no relationship. The purpose of this paper is to refute this belief by illustrating the many similarities in the behaviors that are indicative of both creativity and ADHD. Another possibility is that creativity and ADHD are two names for the same syndrome. This is also unlikely because of the many recorded cases of creative people who do not exhibit any characteristics of ADHD and vice-versa.

What we are left with is some overlap of creativity and ADHD. Most people who are knowledgeable about both creativity and ADHD would probably agree with this, but it is the nature of the overlap that spurs disagreement. There seems to be sufficient evidence that there could be physiological, cognitive, and/or temperament bases underlying both conditions. Certainly, there may be some people who are both highly creative and suffer from ADHD; however, it would seem that by definition such people could not be highly productive because a diagnosis of ADHD requires clinically significant impairment (DSM-IV, American Psychiatric Association, 1994). For children, whose creative potential rather than productivity is identified, this may be more likely. However, there is also the concern that creativity may be mistaken for ADHD in some cases.

Although a thorough diagnosis will seek to exclude developmental disorders, mood disorders, and the like (DSM-IV, American Psychiatric Association, 1994), many diagnoses are not thorough. According to Dr. Mark Stein, who runs a University of Chicago clinic for children and adults with ADHD, comprehensive evaluations are rarely done ("Attention Disorder," 1994). Also, there is no similar caveat for clinicians to look for creativity. As Webb (1993) noted, few professionals evaluating a child for ADHD have had any training in recognizing the characteristics of gifted and creative children.

It is the intent here to look at similarities between behaviors indicative of ADHD and creativity in order to question whether some children who exhibit such behaviors are doing so because they are creative and do <u>not</u> have a disorder. As Richters and Cicchetti (1993)

argued, there is reason to question the usefulness of a behavioral diagnosis as an assumption of an underlying mental disorder. Such questions remind us to look at issues in light of new information and that "there are no fixed, immutable answers to questions concerning the boundaries between disorder and nondisorder" (p. 6).

Perhaps what differentiates individuals who use their rapid ideation to create versus those who are disruptive and unproductive is the talent and opportunity to express their energies and ideas in some creative mode. Some indication of this may be found in Barron's (1976) description of the findings of a series of studies of creative individuals in various fields carried out by the Institute of Personality Assessment and Research (IPAR) at the University of California at Berkeley in the 1960s. Using personality inventories, the researchers found the creative groups to have more evidence of psychopathology, but also greater ego strength than less creative comparison groups in the same professions. The conclusion about the creative groups was that ". . . they are much more troubled psychologically, but they also have far greater resources with which to deal with their troubles" (p. 197). Richards (1981) described the advantages of rapid ideation, heightened emotional awareness, and energy to creativity, but warned that there must be some balance of a strength to fully use these abilities so that they do not degenerate into psychopathology. Calic (1994) found that the creative adults in her study described how they used their energy, emotionality, sensuality, and rapid ideation to create.

Because IPAR's, Richards', and Calic's findings were based on studies of adults, it may be that understanding and control of ADHD-like behaviors is developmental. If such is the case, then perhaps it would be most helpful to assist children in finding creative outlets and tapping into their restlessness to produce something creative. The role of the parent and teacher would be to help the child find a mode of expression and learn to use that to get the ideas, emotions, and energy out productively.

ADHD and Giftedness

Although it has been the primary purpose of this paper to relate the similarity of behaviors indicative of ADHD and creativity, it is important to note that many intellectually gifted children also exhibit behaviors that are associated with a diagnosis of ADHD. Although it is possible for children to be both gifted and ADHD, there are dangers of misdiagnosis for gifted children when the evaluation is not thorough (Webb & Latimer, 1993).

Observed as inattentive, the gifted child may be bored. Described as hyperactive, the gifted child may be displaying a high energy level. Regarded as difficult and obstreperous, the gifted child may be questioning authority and creating a personal, complex rule system (Webb & Latimer, 1993).

Michael Kearney, the youngest college graduate in the world, was diagnosed as a toddler with ADHD and prescribed ritalin. However, his parents declined drug treatment and decided to nurture Michael's genius with education instead. He started school at age three, entered junior college at six, and graduated from the University of South Alabama at ten (Patureau, 1994). His father, Kevin Kearney, refused the notion that Michael's inattention is due to a lack of attention:

> In fact, children like Michael have an attention surplus. He's so much faster than we are. In two seconds he's figured out what you're going to say. He's toyed with a few answers and now he's looking around waiting for you to finish. It

looks like he's not paying attention and it drives teachers crazy. (Kearney quoted in Patureau, 1994, p. M4)

According to Webb and Latimer (1993), the most important distinctions between the gifted child and the child with ADHD are the situationality of the behavior and the variability of task performance. They have contended that the "activities of children with ADHD tend to be both continual and random; the gifted child's activity usually is episodic and directed to specific goals" (p. 2). Also, they have observed that children with ADHD exhibit inconsistency of performance and effort in almost all tasks and in all settings, except television or computer games, although the extent of the behaviors and the degree to which they are perceived as troublesome may vary; gifted children will usually do well in classes that are enjoyable and appropriately challenging. However, some researchers have not seen situational variability as a reason to rule out a diagnosis of ADHD (Barkely, 1990; Schaughency & Rothlind, 1991). To clarify this, the newest DSM-IV guidelines for the diagnosis of ADHD recommend that the symptoms be observed in two or more situations and that the "disturbance causes clinically significant distress or impairment in social, academic, or occupational functioning" (American Psychiatric Association, 1994, p. E:9).

Summary Statement

Because Attention Deficit Hyperactivity Disorder (ADHD) is a psychological classification that has undergone numerous changes in conceptualization and diagnosis over time (Meents, 1989) and place (Levine & Melmed, 1982), and because extant treatments for this disorder have shown limited and questionable long-term results (Meents, 1989; Silver, 1992; Swanson et al., 1993), it is important for educators to look carefully at the behaviors that may warrant such a diagnosis and label for a child. This is of special concern to the field of gifted/creative education because the very behaviors that may induce a diagnosis of ADHD have also been shown to have correlates in the literature on creative behavior (Cramond, 1994b).

Parents and teachers are cautioned to look carefully at behaviors exhibited by children for what may be potentialities instead of deficiencies. Specific recommendations in this regard give guidance when a problem is suspected, when the child is recommended for psychological screening, and after a diagnosis of ADHD is made.

Recommendations for Teachers and Parents

When Attention Deficit Hyperactivity Disorder is suspected

Recommendation 1: Be open-minded to the possibility that difficult behaviors may be indicative of special abilities, such as creativity, as well as problems.

Research Basis: There are many similarities in the behavioral manifestations of creativity and ADHD that may cause errors in attribution (Cramond, 1994b). Farley (1981) and Shaw (1992) have speculated it is the very qualities that are involved in the ADHD diagnosis that enable creative responses.

Recommendation 2: Become knowledgeable about the behavioral manifestations of creativity and ADHD throughout the life span.

Research Basis: Although more recent evidence indicates that ADHD is a lifelong condition (Teeter, 1991), the very behaviors that cause difficulties for children in school situations may be helpful in adult careers for which high energy, risk-taking, flexibility in ideation, and ambition may be assets (Hartmann, 1993; Levine & Melmed, 1982; Winslow & Solomon, 1987). Also, children with creative potential may not manifest consistent creative productivity, especially in certain fields, until they mature (Bloom, 1985).

Recommendation 3: Observe and record under what conditions the key behaviors are intensified or reduced.

Research Basis: Because ADHD-type behaviors may be exacerbated when the child is required to engage in unstimulating, highly structured, repetitive tasks (Frick & Lahey, 1991), noting under what conditions the child is most likely to exhibit the behaviors may be instructive. According to Farley (1981), sensation seeking behavior is increased in unstimulating environments.

Recommendation 4: Ask the child what s/he is thinking about right after a period of daydreaming.

Research Basis: Because it is difficult to differentiate between inattention and diverted attention (Rutter, 1989), it may be informative to discover whether the daydreaming child is not attending or is attending to alternative stimuli, plans, or ideas that are focused.

If the child is referred for psychological screening

Recommendation 5: Whenever possible, choose a psychologist who is knowledgeable about giftedness and creativity as well as Attention Deficit Hyperactivity Disorder, or willing to learn.

Research Basis: Because there is no definitive test for ADHD, the diagnosis of this disorder is made through the use of behavioral checklists. Such a diagnosis is susceptible to the interpretations of various observers as to the frequency and severity of the behavior, and correlations of behaviors between parent and teacher reports have been low (Biederman, Keenan, & Faraone, 1990; Schaughency & Rothlind, 1991). Webb (1993) observed that few psychologists have had any training in recognizing characteristics of gifted and creative children. Therefore, a psychologist who is willing to learn about the similarity of characteristics, perhaps by reading a paper such as this, would be preferred.

Recommendation 6: Be sure that a creativity test or checklist is completed in addition to the ADHD checklist.

Research Basis: Once the behaviors have been interpreted as deficiencies, it is unlikely that related proficiencies will be seen. In a recent study (Cramond, 1994a), it was determined that half of the ADHD diagnosed group scored above the 70th percentile on a test of creativity, yet only seven of the 34 (21%) children had been screened for the gifted program. Eleven of these children, 32% of the ADHD group, scored above the 90th percentile, and only six had been screened for the gifted program. None had any indications of observed creativity in their records, although several had indications of other problems such as learning disabilities and emotional handicaps.

If the child is diagnosed as having ADHD

Recommendation 7: Get a second opinion.

Research Basis: Even in a clinical setting with diagnoses based on interviews and judgment of symptoms indicative of the DSM-III, reliability of diagnoses were very low (Werry, Methven, Fitzpatrick, & Dixon, 1983). The definitions and criteria for diagnosis of ADHD have changed so often that even those who research ADHD are in conflict over its causes and defining behaviors (Meents, 1989). Children diagnosed under one version of the DSM criteria would not be diagnosed under another (Schaughency & Rothlind, 1991). Thus, whether a child is diagnosed with ADHD may depend to a large extent upon when (Meents, 1989) and where (Levine & Melmed, 1982) the referral is made.

Recommendation 8: Be cautious about recommendations for the use of methylphenidates or other drugs.

Research Basis: There is reason to be concerned that the increase in attention and left hemisphere enhancement comes at price to cognitive functioning in other areas (Malone, Kershner, & Siegel, 1988), although some studies have indicated that groups on medication perform as well or better on tests of creativity while they are on medication (Funk, Chessare, Weaver, & Exley, 1993; Solanto & Wender, 1989). Other complicating factors associated with the use of methylphenidates, of which Ritalin is the most commonly prescribed for ADHD, include the worsening or inducement of depression (Weinberg & Emslie, 1990) as well as appetite reduction, insomnia, increased irritability, headaches, stomachaches, motor and/or vocal tics, and suppression of height and weight gain (DuPaul, Barkley, & McMurray, 1991). However, for most children side-effects are mild and associated with higher dosages (DuPaul et al., 1991). Of equal concern in assessing the costs and benefits of medication treatment is the lack of evidence of any long term benefits of the medication (DuPaul et al., 1991; Meents, 1989). In their review of the literature on the effect of stimulant medication on children with ADHD, Swanson and his colleagues (1993) concluded that with medication one should expect temporary management of diagnostic symptoms and improvement of associated features, but should not expect predictability of response, absence of side effects, or improvement in long-term adjustment in terms of academic achievement or reduction of antisocial behavior (p. 159).

Recommendation 9: Be cautious about recommendations for an unstimulating curriculum with lessons broken into small parts.

Research Basis: Although such recommendations are common, the limited effectiveness of interventions on the long-term achievement of children diagnosed with ADHD (Silver, 1992) cast doubt on their broad, continued usage. Zentall and Leib (1985) found that a structured prescribed-response condition reduced the activity levels of both hyperactive

children and controls, suggesting that structure is useful in decreasing activity level. However, Farley's (1981) research connecting both hyperactivity and creativity to sensation-seeking lead his colleagues and him to a series of studies to investigate the aptitude-treatment interaction of level of sensation seeking and crossed with educational environment, traditional, and structured versus unstructured and open. He concluded that hyperkinetic children need arousing, unstructured, creative teaching to perform best, exhibit fewer hyperkinetic symptoms, and report greater satisfaction with school. It is clear that given the heterogeneity of the group of children who are diagnosed under the umbrella designation of ADHD, the needs of the individual child should be considered in designing a modification in the curriculum (Silver, 1992). Gifted, creative children who exhibit behaviors typical of ADHD still have the needs for complex, stimulating curriculum that other gifted, creative children require.

Recommendation 10: Provide opportunities both inside and outside of school to enhance creativity and build self-esteem.

Research Basis: The emphasis in research and intervention with ADHD is on identifying deficiencies (c.f. Frick & Lahey, 1991; McBurnett, Lahey, & Pfiffner, 1993) and remediating them (c.f. Burcham, Carlson, & Milich, 1993). Although good school-practices for ADHD children should focus on strengths as well as weaknesses (Burcham et al., 1993), it is often up to the parents to provide opportunities for expression of creative strengths outside of school. A negative label may affect not only the way a child is perceived by teachers, but also the child's self esteem (Rosenthal & Jacobson, 1968). If medication is prescribed, there may be psychological effects on attribution for behavior (Swanson et al., 1993), in that the child gives up responsibility for his behavior and charges his good or bad behavior to the medication. Therefore, it is important to bolster the self esteem and nurture strengths as much as possible within school and without. Parents and teachers should work together to help the child find a mode of expression and learn to use that to get the ideas, emotions, and energy out productively.

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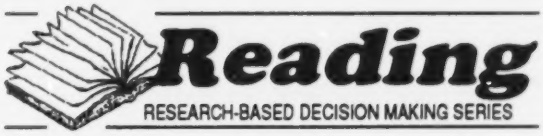

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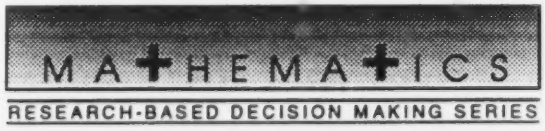

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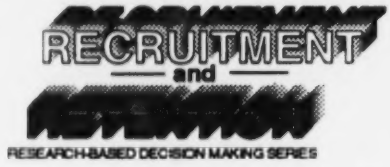

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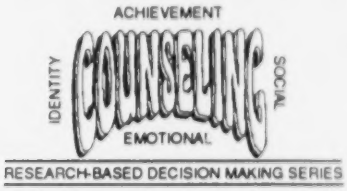

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